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REMARKS

Claims 28 and 29 are new. Claim 28 specifies that the hearing-impaired person has a diminished sense of hearing. Support for this new claim can be found throughout the disclosure, for example, at page 14, lines 4-5, where it states "the hearing impaired persons who are not completely deaf...". It can be understood from this statement that the hearing impaired may have a physical disability which would prevent him or her from hearing properly. Claim 29 specifies that the hearing impaired person has an essentially unobstructed view of the speaker and receives the sound emitted by the speaker through air. Support can be found in figure 1 of the application as originally filed, where it is shown that a speaker wearing the headset is in the same room as the hearing impaired persons. In a classroom, the teacher wears the headset frame with the camera attached thereto and the students have the displays that receive the images of the teacher's mouth. Therefore, it can be understood from this figure that the hearing impaired person has an essentially unobstructed view of the speaker. It can also be understood that since they are in the same room, sound emitted by the speaker will travel through air and be received by the hearing impaired person. Thus, no new subject matter has been entered by the introduction of claims 28 and 29.

The Examiner has rejected claim 20 under 35 U.S.C 112(1) as containing subject matter which was not described in the specification. More specifically, the Examiner states that the specification does not teach the particular use of redundant channels for the video signal, but only for the audio signal. Accordingly, the Applicant has amended claim 20 to remove the reference to the video signal such that the claim states that the redundant channels are used for the audio signals.

The Examiner has rejected claims 11-27 under 35 U.S.C. 112(2) second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 11 and 27 have been amended to provide proper antecedent basis for "said speaker's mouth". Claim 14 has been amended to provide proper antecedent basis for "said wireless transmissions". Claim 24 has been amended to provide proper antecedent basis for "said speech".

Claim 11 has also been amended to include the following limitation:
"wherein sound emitted by said speaker and received by said hearing impaired person

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essentially does not allow said hearing impaired person to understand said speaker" and to specify that the view of the movement of the mouth of the speaker "enables said hearing impaired person to understand said speaker". No new subject matter has been added as a result of this amendment. These limitations were believed to be implicit in the claim as originally filed, but have been added in an explicit manner in order to clearly distinguish the claimed method from the state of the art. In addition, the limitation that the images are transmitted in an uncompressed manner has also been added to claim 11. The term "uncompressed" should be understood as meaning without having been compressed and decompressed. Support for this amendment can be found in the disclosure at lines 10 to 13 of page 17, where it states that "signal compression through a MPEG compressor takes approximately 33 msec, as does decompression through a MPEG decompressor, and thus compression and decompression of the image signal cannot occur".

The scope of claim 11 has not been shifted as a result of this amendment, but has been narrowed. It can be understood from the disclosure that the claimed method of the present application is to be applied in a context where audio alone does not allow a person to understand a speaker. The term "hearing impaired person" is to be understood as meaning one who has difficulty hearing, whether this be due to a physical disability (such as a deaf or partially deaf person) or due to a high level of surrounding noise (such as at a drive-thru window of a restaurant). In this case, having a clear view of the movement of the mouth of the speaker helps understand the poor audio reception by associating the movement of the lips of the speaker with the missed syllables from the audio reception.

In addition, since a hearing impaired person is the receiving party for the images, it is necessary that the images be transmitted without compression or decompression to ensure that full motion video be transmitted without jittering or frame loss and within a minimum time delay. Compression and decompression of a signal can have two consequences: (1) delay of the signal and (2) the possibility that a frame is dropped or that the frame rate not be conducive for full motion video. For the application where the speaker and the receiving party are in the same room, the time delay is an important factor such that sound received through air corresponds to the lip motion displayed on screen. For the application where it is the background noise that causes

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the receiving party to be hearing-impaired, maintaining full motion video to ensure that no frames are dropped such that the communication is clear is also very important.

Thus, claim 11, as amended, is not taught or suggested by any of the references cited or relied upon by the Examiner.

Claims 11, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bullister (US patent 5,886,735) in view of Cannon (US patent 5,742,335). In view of the amendment to claim 11 presented herewith, reconsideration of the 103(a) rejection is respectfully requested for the following reasons.

Bullister discloses a video telephone headset device which includes a video camera configured to capture an image of the user's face when the headset is held adjacent to the user's head. The camera may be oriented towards an image capture mirror located immediately in front of a user's face. The image capture mirror reflects the image of the user's face to the camera. The images are captured and transmitted to a display in order to provide visual communication between the speaker and another party. The system also provides audio communication between the two parties.

As stated in the background of the invention of the present application, "In the Bullister patent, software image correction occurs, which is time consuming, i.e. at least about 500 msec for a full image. Furthermore, signal compression through a MPEG compressor takes place, which delays the image transfer of approximately 33 msec, as does the decompression through a MPEG compressor, the latter not being shown in the Bullister patent, but being necessary to decompress the image compressed by the MPEG compressor. Thus, important delays amounting to up to 2000% and more of a real time transmission occur with the device shown in the Bullister patent."

Thus, it is respectfully submitted that not only does Bullister not teach or suggest transmitting the images in an uncompressed manner, it teaches away from this by specifying that software correction and compression/decompression of the image is performed by the disclosed device. Therefore, claim 11 is not taught or suggested by Bullister.

Cannon is related to the detection of defects in buildings and other large manmade structures and more particularly to a method and apparatus of structural

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defect detection using visual and infrared cameras. Two cameras, a local infrared camera and a local visual-spectrum camera, are mounted on a helmet that is worn by a photographer or camera operator. Video signal transmitters coupled to these cameras are mounted on the helmet. Video signals are transmitted by the transmitters and received by respective signal monitors at a ground station. A succession of frames creates a movie describing each area of interest on the surface of the building. The helmet may also include an audio head set and transmitter, by which means the photographer can give an audio commentary on the area which he or she is inspecting.

While Cannon does teach transmitting images in "real time", this term should be understood from the context of the application as meaning that someone in a remote location can view the images and hear the audio commentary at substantially the same time as the photographer performing the inspection. This does not correspond to the definition of "real time" given at lines 8-12 of page 3 of the present application, which is having a maximum delay of 33 milliseconds between the moment when the image is perceived and the moment when the sound is perceived ("The Effect of Imperfect Cues on the Reception of Cued Speech", written by Maroula Sarah Bratakos of the Massachusetts Institute of Technology, September 1995). Furthermore, Cannon does not teach capturing an image of the speaker's mouth and is not related to the art of communication between a speaker and a hearing impaired person. Therefore, Cannon has no reason to suggest transmitting images in an uncompressed manner.

Therefore, it would not have been obvious to combine Bullister and Cannon to obtain the method claimed in claim 11.

Claims 12-29 are dependent on claim 11, which is believed to be new and inventive over the cited references.

In view of the above, it is respectfully submitted that claims 11-29 are patentable over the cited references and a notice of allowance to the effect is earnestly solicited.

In the event that there are any questions concerning this amendment or the application in general, the Examiner is respectfully urged to telephone the undersigned so that prosecution of this application may be expedited.


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Date